State Forestry Interagency Radio Console Interoperability & High Level Connectivity Upgrade

Background:

The Arizona State Forestry Division (ASFD) is proposing to implement a project to add the Arizona Interagency Radio System (AIRS) into the Forestry Division's Arizona Interagency Dispatch Center (AIDC). Ninety percent of the funding for the proposed project would be provided through the 2009 State Homeland Security Grant Program.

Major projects being implemented by State Agencies are subject to oversight by the Government Information Technology Agency (GITA) and follow a Project Investment Justification (PIJ) process. This process provides executive branch agencies, boards and commissions with a standardized method to describe new or enhanced IT projects and investments. Before beginning an IT project valued over $25,000, every agency is required to develop a PIJ. The PIJ provides an assessment of the business and technical requirements, public value and benefits to the state, costs, risks and management sponsorship of the project.

ASFD submitted a PIJ for this project to GITA and received the agency's *Approval with Conditions* of the project as follows:

> Per the Memorandum of Understanding (MOU) for use of the AIRS system with Arizona Department of Public Safety, users agree to comply with and follow the Arizona Interagency Radio System (AIRS) State Plan. In accordance with the AIRS state Plan – Standard Operating Procedures, the Statewide Interoperability Executive Committee (SIEC) is responsible for oversight of AIRS. Therefore, this approval is conditional on approval of the AIRS portion of the project by the SIEC.

ASFD is now requesting SIEC approval for this project.

Workgroup Referral:

On April 30th, the SIEC's Workgroups were asked to review excerpts from the following documents:

- Forestry's Grant Application
- The Project Investment Justification
- Forestry's Memo summarizing the request:

The excerpts sent are attached to this document as Appendix A. They provide detailed information about the project.

After reviewing the excerpts, the Workgroups were asked to participate in a meeting to discuss the project on Monday, May 10th at 12:30 PM in the Conference Room at the Government Information Technology Agency, 100 N 15th Avenue, Suite 440 in Phoenix**.**

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There was a teleconference line available for those who could not attend the meeting in person. Written questions and comments were also invited, with workgroup members advised to submit them by emailing siec@azgita.gov prior to 10:00 AM on Monday, May 10th.

Workgroup Meeting on the Project

The Workgroup Meeting was held Monday, May 10th from 12:30 to 1:25 PM

Participants: Dale Brown and Jon Huish, Arizona State Forestry; Morgan Hoaglan, AZDEMA; W. Scott Tillman, DPS; Tom Florman, Coconino County Sheriff's Office; Michael Todd, Andy Clark, Michael Britt and Emilie Sundie from the PSIC Office.

Workgroup Meeting Goal:
Assemble questions and recommendations for consideration by the SIEC at its next meeting, to be held on May 18th from 10:00 AM until Noon in the 3rd Floor Conference Room of the ADOA Building at 100 N 15th Avenue, Ste 440, Phoenix, AZ 85007

Workgroup Meeting Agenda:

1. Overview of the Project by Dale Brown, State Communications Officer for Forestry, that included:
    a. How AZ Forestry currently provides dispatch services and meets its communications needs, and shortcomings currently being faced
    b. What capabilities this solution provides
    c. How this proposal enhances Forestry's interoperable communications needs
    d. How Forestry expects to use the system
2. Q&A and Discussion of the Proposed Project that included:
    a. DPS input regarding this proposal
    b. Whether this use of the AIRS network would be interruptive for other users
    c. How the proposed solution would improve or hinder the way that the AIRS network is monitored, dispatched and used
    d. Other impacts, such as those on system coordination, user training, and interoperability exercises
3. Solicitation of input on additional information needed or additional questions the SIEC should address
4. Discussion of next steps

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Discussion Summary per the Agenda listed above:

Overview of the Project

Dale Brown explained Forestry's responsibilities and the agreements they have with fire departments. Fire fighting is seasonal, though they have a 365 day a year operation. Forestry has a VHF radio system used by their first responders.

They are pleased with the development of AIRS and want to take advantage of all the work that has been done to meet their interoperability needs. They have used AIRS locally, and have utilized the AIRS network when participating in statewide responses. They would like to bring the AIRS network into their statewide dispatch center. They do not want to become a PSAP, but want to use the system effectively, and that can best be done through their dispatch center. They coordinate resources statewide from their dispatch center, and want to communicate with DPS and other agencies on UHF and 800 MHz frequencies.

John Huish stated that they want to have more tools in the box. AIRS does not route to any one single point. PSAPs all over the state have a piece of it, but no one has the whole AIRS system in one place. From time to time, having the capability to get into any AIRS site from a single point would be a valuable tool in an all-risk environment. Since Forestry supports a Type 2 Incident Management Team, they work on all-hazards incidents part of the time. Their use would be primarily strategic not operational, since they have their own operational system, and have the ability to get additional equipment from DEMA and the National Interagency Fire Center in Boise. But they need AIRS to coordinate efforts with disparate radio systems when things like evacuations or road closures are needed. They would find it helpful in the first few hours to get resources into place. If they need to get equipment from Tucson, for example, there is no common travel channel available to coordinate that, and they have to coordinate with every PSAP along the way. There are also side benefits to maintenance that could be realized in terms of identifying issues through the console if voters are not working, and so on.

On the solution being proposed, Forestry utilizes DPS for their telecommunications needs, so they have worked with DPS on this, and Scott Tillman has helped them define their needs. The prior solution they had utilized, Orbicom consoles, is obsolete, so they are looking at a Radio over IP (RoIP) solution. With RoIP, there is generally an Internet device on the mountaintop, or wherever the RF radio exists, and the converter converts from RF to IP and distributes it down to the console level. For this project, they will be putting the devices into the microwave control room where the voters are. This new technology can help any state agency or other agency with business continuity, because

it provides the capability to re-establish a communications center much more easily using a laptop, instead of working on infrastructure.

Scott Tillman explained that the technology Forestry is planning to use is the same as that used by DEMA for their new radio IP console. It potentially gives DEMA access to the AIRS network statewide without having to buy and install the converter boxes for each individual system. DPS does not support Ethernet at the site at this point so that is why we are continuing down the road to put the IP converters into the microwave room and convert the audio interface there. That would help DPS to migrate to IP in the field at some future point.

Q&A and Discussion of the Proposed Project

DPS input regarding this proposal

Scott Tillman stated that the advantage is that Forestry is proposing to put in a lot of infrastructure that has the potential of being shared back out to any of the agencies we have connections with or agencies that would like to have connections back to DPS if there were logical reasons to do that. So there could be a larger area you could support if you were looking to cover a northern or southern area, or one that crosses county lines.

Michael Britt asked if, since IP makes it easier to use the system, there are concerns about overloading the system.

Scott Tillman replied that with one frequency, there are always concerns about overloading the system, with having more than one activity occurring simultaneously in a region. That will need to be dealt with when it occurs, i.e. can you separate the incidents off to different mountaintops, and so on. In the Rocky Mountains, we tend to think of frequencies as belonging to an individual entity, but in the East everybody gets to share on the channel. What is the more important use depends on what is happening, and you have to figure out how to share the resource. Forestry has adequate resources to manage the fire, but when you need to talk to the locals, this is when you need something like this. To him, it makes good sense.

Dale Brown stated that he would be building his own system to respond just as he has in the past. From the perspective of who gets priority for this new capability, they will be considered against other needs. AIRS will help them for longer term fires where they are working on evacuations or with the County Sheriff or DPS.

Scott Tillman stated that AIRS was used at the Rodeo/Chediski and Payson fires. Since that time, the system has been enhanced by the addition of the AIRS suite on Mt. Ord

and the 800 MHz band so essential to incorporating support from Maricopa County. AIRS is essential to having urban and rural agencies support each other.

Tom Florman asked Dale Brown to explain his direct participation with the U.S. Forest Service during wildland fires in the Forest

Dale responded that the role varies. In Coconino County, the Coconino National Forest is the coordination center for dispatch. They call Forestry's dispatch to acquire local Fire Department resources. Forestry then contacts the agencies with which they have agreements, provides them with the location and radio frequencies to be used, and dispatches the fire departments from their center. At one time the National Forest called the fire departments directly, but now that Forestry has agreements and reimbursement processes in place, Forestry does the coordination and dispatching.

Whether this use of the AIRS network would be interruptive for other users

Would this particular use be interruptive of other users, i.e. any thoughts about what we might need to do to make this additional use operationally effective?

Tom Florman stated that we need to set up some kind of protocol for handling secondary needs.

John Huish stated that the AIRS SOP addresses that to some degree.

Emilie Sundie stated that was a good thought to keep in mind with respect to having the AIRS SOP updated and properly addressing the current use of the AIRS system.

John Huish stated that fire would not be an exclusive user and there would always be some communications capability available on the channel. He noted that the AIRS system on Signal Peak was used for the Government Springs fire, and that the communications usage for that event was typically six messages a day for three days.

Dale Brown suggested that the AIRS SOP could be reviewed to make sure it was adequate.

How the proposed solution would improve or hinder the way that the AIRS network is monitored, dispatched and used

On monitoring, John Huish stated that there would be more presence on the channel, but Forestry would not be acting as a PSAP and so nothing really should be changing from a monitoring standpoint.

On dispatching, no feedback was received with respect to improvements or hindrances.

On field users, Morgan Hoaglin stated that he thought there would just be more educated users around the state who now knew about the AIRS system and how it is used.

Question from Scott Tillman to Dale Brown - Do you expect to just monitor this during the time of your fire season? Or will you have the speaker on backup position most of the time?

Dale Brown stated that during the fire season they would be monitoring it most of the time. They would be aware of other uses. They would contact the local PSAP to see if the channel is available before using it. If there was a need for them to monitor it, they certainly could because they also operate most days during the winter months. If they were contacted, they would do what they could to help.

Scott Tillman commented that it then looked as though there were additional facilities available to the network based on accessibility to Forestry's dispatch. While it's not a primary function, it could be used for backup assistance.

Other impacts, such as those on system coordination, user training, and interoperability exercises

John Huish thinks the field users will not see any difference as they are not affected by what is happening at the back end. They will need to do some training with their dispatchers on how multiband gateways work. They already have a voted system in place so they are used to that. They just need to understand how AIRS works compared to that system.

Morgan Hoaglin views this as a big opportunity because of the size of Forestry and their activity. If they take the time to get the word out, and they drill at the State level on State exercises, this could give more field users the opportunity to actually use AIRS. AIRS isn't currently specified for use in State exercises, but use of that system could be incorporated.

Solicitation of input on additional information needed or additional questions the SIEC should address

No additional input was received.

Next Steps

Emilie Sundie stated that she would generate a summary of the discussion and distribute it to the attendees to ensure that it was accurate. After any corrections or additions to the summary were incorporated, the summary would be sent out as part of the briefing document for the project. Attendees were also invited to mention the project to others and invite them to provide input, either by phone or email.

Post Meeting Activity

The summary document was generated and distributed to the attendees. Three of the attendees confirmed that the summary document was appropriate, and no attendees provided any corrections or additional materials for the SIEC to consider.

No input was received from anyone not in attendance at the meeting.

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Appendix A

Excerpts from Documents provided by the Division of Forestry

Grant Application Excerpts:

Project Narrative: This project will provide radio communications interoperability equipment and high level connectivity to the AIRS system for enhanced coordination and communications of emergency first responders. Without this project, existing Forestry Division equipment cannot connect to the AIRS system from the Statewide Interagency Wildland Fire Dispatch & Coordination Center. This project will support the goals of the Statewide Communications Interoperability Plan by allowing us to connect our interagency dispatch center to the AIRS system in order to provide enhanced interoperable communications for 4,000-6,000 emergency first responders and provide enhanced support to the DOHS and DEMA through the State Emergency Preparedness Plan.

Project Justification: The present State Forestry and BLM radio systems that route to Arizona Dispatch Center are limited to 22 radio sites. State Forestry desires to expand this capability to include all AIRS sites, and eventually high level connectivity to the State trunked overlay to provide enhanced communications to our emergency first responders.

Goals and Objectives of the Proposed Project: The present State Forestry and BLM radio systems that route to Arizona Dispatch Center are limited to 22 radio sites. State Forestry desires to expand this capability to include all AIRS sites, and eventually high level connectivity to the State trunked overlay to provide enhanced communications to our emergency first responders.

Milestones: (1) Order replacement consoles and channel cards for existing Orbacom common equipment cabinet (2) Acquisition and production at vendors (3) Install channel cards at DPS microwave system interface. Install console equipment at the Arizona Interagency Wildland Fire Dispatch Center (4) Test and turn up connection and operation of all available AIRS suites from field through DPS microwave system to the Arizona Interagency Wildland Fire Dispatch Center.

Equipment: Improved computer-based consoles allow enhanced connectivity to AIRS interoperability network, and high level interconnectivity to the State 700-800 MHz overlay. (1) PC based Orbacomm console equipment (2) Bridging equipment to connect to DPS microwave

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Project Summary:

Local Unit of Govt:	Arizona State Forestry Division
Contact:	Dale Brown
Contacts Address:	2901 West Pinnacle Peak Road Phoenix Az. 85027-1002
Project Point of Contact	Dale Brown
POC Phone:	602-255-4059 ext 224
POC Email:	dalebrown@azstatefire.org
POC Address:	same as above
Award Amount:	$118,000
Funding Source:	State Homeland Security Grant
Project Title:	State Forestry Interagency Radio Console Interoperability & High Level Connectivity Upgrade
Project Type:	Develop/enhance interoperable communication systems
Project Description:	Upgrade of radio console and high level system equipment to accommodate AIRS system for emergency first responders
Investment Supported:	Strengthen Communications Collaboration
Primary Capability:	Communications
Primary Goal:	Bolster emergency preparedness, response and recovery planning capabilities while protecting first responders
Objective:	Improve and enhance statewide interoperability communications capability.

Project Investment Justification (PIJ) Excerpts:

A. Management Summary

The Arizona State Forestry Division, (ASF) provides for the suppression and prevention of wildland fires on 22.4 million acres of State and unincorporated private lands within the State of Arizona. Supporting this mission of ASF is a complex two-way radio repeater communications system incorporating over 20 mountaintop radio repeaters and base stations. The ASF radio system is managed by the Communications Section of the ASF. The ASF-Arizona Interagency Dispatch Center (AIDC) located in North Phoenix is the primary statewide firefighting coordination and dispatch center that utilizes the ASF radio system to mobilize emergency first responders to reports of wildfire. The AIDC serves as the only statewide firefighting coordination center in Arizona for the responsibilities of the ASF as well as provides the coordination and dispatching for several Federal wildland firefighting agencies; specifically the Phoenix District of the

Bureau of Land Management (BLM), Colorado River District BLM, U.S. Fish and Wildlife Service for Western Arizona and the Bureau of Indian Affairs for Western Arizona. The ASF-AIDC also supports FEMA and DEMA with logistical and supportive actions on other State emergencies and disasters including National disaster assistance.

The primary focus of this project is to add an existing interoperable statewide radio network system called "AIRS" into the AIDC to provide emergency wildland fire first responders additional radio interoperability.
In essence, the inclusion of AIRS into the AIDC will afford the capability to provide disparate radio system users the ability to communicate with each other not only on a car-to-car basis but also on a high level capability within the AIDC.

This project is termed the ASF Radio Console Interoperability & Connectivity Upgrade (ASF-RCICU) and will upgrade two radio consoles within the AIDC and add the necessary bridging and connectivity equipment to connect existing key AIRS sites into the AIDC. The AIRS network, AIRS system Locations is a Statewide interagency radio system that contains a suite of VHF, UHF and 800 MHz radios that are linked together which provide disparate radio system users the ability to talk to each other on these different radio bands. Numerous public safety emergency response agencies have entered into a MOU with the (PSCC) Arizona Public Safety Communications Advisory Commission to utilize this system. The AIRS network is divided into 10 regions. Each region contains anywhere from 2 to 6 AIRS radio suites that are monitored by a local (PSAP) Public Safety Answering Point. The continuing objective of this project is to utilize the AIRS network from a high level connectivity point, i.e. the AIDC, to enhance interoperability and safety amongst emergency first responders to wildland incidents as needed from the AIDC. The use of the AIRS network is defined within the current MOU with the Arizona (PSCC) Public Safety Communications Advisory Commission and will be used in accordance with the Standard Operating Procedures as outlined in the AIRS Users Guide. It is not the intent for the AIDC to become a PSAP, but merely use AIRS as an additional tool to increase the safety and effectiveness of mobilized wildland fire emergency responders from the AIDC.

Engineering activities will be provided by both internal staff within the Communications Section of ASF and within the realm of the engineering section of the Arizona Department of Public Safety- Wireless Systems Bureau (DPS-WSB). Minor engineering may be needed to accommodate connectivity to AIRS. All frequencies and licensing have been previously licensed, coordinated and engineered.

An existing interagency services agreement with DPS-WSB provides authority and guidance for the necessary cross-agency coordination and resource utilization to design and deploy the RCICU.

B. Proposed Changes and Objectives, "To Be"

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The core objective of this RCICU is to increase the interoperability, coordination and dispatching of emergency first responders to wildland fires from the AIDC. Therefore this RCICU-expansion provides both expanded geographical coverage (radio coverage) and expanded talk-paths[1] necessary to keep pace with the expanded presence of all emergency first responders in the support of wildland fire fighting incidents in Arizona.

C. Existing Situation and Problem, "As Is"

Simply stated, the existing ASF Radio system is sufficient to sustain quick initial attack actions but the inclusion of the AIRS network will increase efficiency and safety and provide for greater interoperability for all responders to wildland fire incidents from this proposed high level connection.

ASF can continue to operate using existing systems and processes. However, interoperability capability will deteriorate without the use of the AIRS resulting in declining service to the public and possibly a degradation of communicating safely and effectively amongst emergency first responders. The drivers of this deterioration include both increased demands – new and growing populations in unincorporated areas of Arizona – with high expectations of public safety during disaster response periods.

D. Proposed Technology

This RCICU involves the purchase and deployment of PC based radio consoles, a gateway and a version of RoIP, or Radio over Internet Protocol for connectivity to AIRS via the DPS-WSB Network Operations Center (NOC). This technology is currently deployed by many Federal wildland firefighting agencies and Public Safety agencies throughout Arizona.

The RCICU will be connected to the DPS-WSB statewide microwave backbone to make the connection at the ASF's AIDC Statewide interagency Dispatch Center located at 2901 W. Pinnacle Peak Road in Phoenix.

This RCICU will consist of two PC based radio consoles, 18 network remote adapter controllers, and 6 electronic bridging devices to connect to the Arizona Interagency Radio System (AIRS) network from the DPS-WSB microwave backbone in order to communicate from the AIDC.

[1] Talk-paths are the number of simultaneous communications channels, one of which is necessary for the RCICU to communicate with emergency first responders.

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An existing interagency services agreement between the ASF and the DPS-WSB provides authority and guidance for the necessary cross-agency coordination and resource utilization to design and deploy the RCICU. Availability of necessary resources, including VHF, UHF and 800 Megahertz frequencies and engineering has been confirmed by the ASF Communications Staff and with the engineering section of the DPS-WSB. The AIRS system is fully functional in most of Arizona and has previously been engineered and installed by DPS-WSB. Each AIRS region is monitored by a Public Safety Answering Point (PSAP) for their specific mountain top cross-banded repeaters or (AIRS Suite).

Forestry Memo Excerpts:

Several years ago, the State Forestry Division (SFD) realized the value in the development and implementation of the AIRS network for the coordination and communications of emergency first responders. In 2007, as the AIRS network progressed, the SFD also determined that we could enhance the coordination and communications of emergency first responders for certain types of wild fires using the AIRS network from within our Statewide Interagency Wildland Fire Coordination Center (SIWFCC) located in North Phoenix. This center serves for the centralized dispatch and coordination of emergency first responders to reports of wildland fire for not only the State Forestry Division statewide but for other wildland firefighting agencies such as; BLM, USF&WS and the BIA in western and central Arizona. The State Forestry Division is responsible for the wildland fire suppression on 22.4 million acres of State and Unincorporated private lands in Arizona. To accomplish this huge task we utilize most of Arizona's city, rural, local and volunteer fire departments in conjunction with some State Forestry assets as our primary firefighting workforce and emergency first responders. As wildland fires become more complex and involve Law Enforcement, Public Safety and other emergency first responders, the greater the need to be able to communicate effectively with all radio spectrum users. As you may know, the State Forestry Division operates our own extensive statewide VHF two-way radio systems. However, from time to time, the need exists during the initial phase of some complex wildland fires and requires extensive coordination with not only firefighting resources, but law enforcement, medical, municipal, infrastructure and other emergency first responders.

The SFD explored funding alternatives to provide connectivity of key AIRS voters and individual AIRS radio sites to the SIWFCC radio consoles. In 2009, we received a grant to fund our connectivity project. In March 2010, the Arizona Government Information Technology Agency which is the oversight agency for State Agencies gave us their conditional approval of our project and instructed us to secure approval from the SIEC as well.

When we originally developed our AIRS connectivity concept project, the AIRS network was still in the design and engineering phase and under the coordination of DEMA and DPS. And, we are very excited that the AIRS network now has this multi-discipline

oversight and direction from the SIEC.

Our proposal is to add ARIS connectivity into our statewide dispatch center which will build a standard infrastructure for future radio over IP interfacing and for future development or connections into the AIRS network. This groundwork will also provide connectivity assistance for DEMA to complete their phase of adding capability to the State EOC in addition to other benefits for the AIRS network for connectivity.

Arizona Forestry understands the intent of the AIRS network and the relationship and stake that the PSAPs have. As part of our MOU to use the AIRS network, we fully understand the SOP, and during the occasional need to use AIRS, we will keep traffic on the AIRS system to the minimum needed to coordinate essential interagency multiple discipline activities. Other emergency use would never be excluded, but would be accommodated in the traffic flow in accordance with SOP established priorities. During most all of our wildland incidents, we will use our own radio systems and implement other State and National Interagency Incident Radio Communications Cache equipment as needed. It is projected that on the occasional incident where we could utilize AIRS, our use would be limited to coordination of interagency support services requiring a cross-band gateway, such as County Sheriff's, DPS, ADOT and other UHF/800 MHz responders. Appropriate assignment and usage limits will be noted on the Incident Communications Plan. In any event, it is not the intent to occupy AIRS with tactical fire ground traffic. There are other frequencies available for that purpose. Rather, AIRS usage would be Command Net and/or communications with dispatch where other radio circuits are not available. The vast majority of our radio traffic is carried and will continue to be carried on our own VHF radio network.